

NOTES ON SOUTH AFRICAN MARINE† ALGAE. V.

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Earlier papers in this series (1940, 1943, 1952, 1956) dealt with questions relating to the identity, taxonomy, and nomenclature of some of the South African green, brown, and red marine algae. The present article deals with questions relating exclusively to red algae.

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Antithamnion densum (Suhr) Howe

Suhr in 1840 (p. 281) described a species from Peru under the name *Callithamnion densum*. Howe (1914, p. 151) has referred this species to the genus *Antithamnion*.

J. Agardh (1851a, p. 66) mentioned *Callithamnion densum* under "*Species inquirendae*" and gave Peru as its locality. Later (1876, p. 51) he again included it under "*Species inquirendae*" but in error gave South Africa instead

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of Peru as the locality. Barton (1893, p. 114) on the authority of J. Agardh included the species in her list of the marine algae of South Africa. The species, as far as known, does not occur in South Africa.

Aristothamnion collabens (Rudolphi) Papenfuss, comb. nov.

Asperocaulon collabens Rudolphi, 1831, p. 178. Suhr, 1834, p. 741.

Aristothamnion purpuriferum (Kützinger) J. Agardh, 1892, p. 45. Barton, 1893, p. 114.

Phlebothamnion purpuriferum Kützinger, 1849, p. 656; 1862, p. 3, pl. 7, figs. c–e.

Pleonosporium purpuriferum (Kützinger) DeToni, 1903, p. 1307.

Callithamnion purpuriferum (Kützinger) J. Agardh, 1851a, p. 59.

Phlebothamnion squarrosus Kützinger, 1849, p. 659; 1862, p. 5, pl. 15, figs. a–c.

Callithamnion squarrosus (Kützinger) J. E. Areschoug, 1854, no. 56.

Phlebothamnion compressum Kützinger, 1864, p. 32, pl. 91, figs. c and d.

Callithamnion compressum (Kützinger) DeToni, 1903, p. 1334.

Dasya collabens sensu Barton, 1893, p. 175 (non J. D. Hooker et Harvey).

This species has suffered much taxonomic and nomenclatural confusion. It has become well known as *Pleonosporium purpuriferum* (Kützinger) DeToni, but it was first described as *Asperocaulon collabens* by Rudolphi in 1831 and this specific name has priority.

Kützinger in 1849 (pp. 656 and 659) described the species as *Phlebothamnion purpuriferum* and *P. squarrosus*, and for a third time in 1864 as *P. compressum*. Barton (1893) in error associated *Asperocaulon collabens* Rudolphi with *Dasya collabens* J. D. Hooker et Harvey, a species from New Zealand.

Evidently it, at first, was Rudolphi's intention to call the species *Asperocaulon compressum* (he described it in part as “. . . siccitate ramisque compresso-planis. . .”) and, as so often happens, he forgot to change the name to *collabens* on the pieces of paper bearing the specimens. Kützinger's (1849) description and subsequent (1862) illustrations of *Phlebothamnion squarrosus* are based on a Rudolphi specimen which bears the name “*Asperocaulon compressum*”, a binomial cited and credited to Rudolphi by Kützinger (1949). Kützinger's material is accompanied by a label to the effect that the plant occurred on *Sphaerococcus dilatatus* (= *Gymnogongrus dilatatus*), one of the hosts mentioned by Rudolphi in his description of *A. collabens*. With Harvey's specimens of *Callithamnion purpuriferum* at Trinity College, Dublin, is a note that reads: “This is *Asperocaulon compressum* Rudolphi! fide Herb. Binder!” I have selected the Rudolphi specimen illustrated by Kützinger (1862, pl. 15, fig. a) as lectotype of *Asperocaulon collabens* Rudolphi.

In 1892 J. Agardh erected the genus *Aristothamnion* for *Phlebothamnion purpuriferum* Kützinger. This genus was reduced to a synonym of *Pleonosporium* (Nägeli) Nägeli ex Hauck by DeToni (1903, p. 1303). Baardseth (1941), on the

basis of his own work on a new species, *Aristothamnion ramellifera*, from Tristan da Cunha and on that of Westbrook (1927) on the species from South Africa, argued for the retention of *Aristothamnion*. He has been followed by Kylin (1956, p. 383) and Simons (1960), and I am also following him.

***Chaetangium erinaceum* (Turner) Papenfuss**

Chaetangium erinaceum (Turner) Papenfuss, 1952, p. 173.

Chaetangium dichotomum Kützinger, 1869, p. 18, pl. 48, figs. c–f.

Chaetangium hystrix (C. Agardh) Kützinger, 1849, p. 793 (only as to South African material, not as to type of *Grateloupia hystrix* C. Agardh, 1822, p. 223).

Examination of Kützinger's (1869) type of the little-known *Chaetangium dichotomum*, described on the basis of material from South Africa, has revealed that it is one of the many morphological expressions of *C. erinaceum*.

In a previous paper (1944) I discussed the probable source of the species described by C. Agardh (1822) as *Grateloupia hystrix*, the basionym of *Gigartina hystrix* (C. Agardh) Setchell et Gardner (1933), and pointed out that the type probably was collected at Monterey, California. The South African material that Kützinger (1849; see also 1869, p. 18, pl. 49, figs. a–d) in error associated with *Grateloupia hystrix* when he made the combination *Chaetangium hystrix*, is in his collection at Leiden and is representative of *Chaetangium erinaceum* (Turner) Papenfuss.

***Chamaethamnion schizandra* Falkenberg**

When describing this parasitic genus and species of Rhodomelaceae, Falkenberg (*in* Schmitz and Falkenberg, 1897, p. 449) gave the South African and Australian seas as the places of occurrence of the species, and *Polysiphonia nigrita* Sonder (= *P. cancellata* Harvey) as its host. In 1901 (p. 579) Falkenberg referred only to material from Australia. Kylin (1956, p. 519), in his *Gattungen der Rhodophyceen*, accepts the distribution of this monotypic genus as given by Falkenberg in 1897. However, as far as known, neither *Chamaethamnion schizandra* nor its host occurs in South Africa.

***Chondria armata* (Kützinger) Okamura**

Chondria armata (Kützinger) Okamura, 1907, p. 69, pl. 16, figs. 9–19. Weber-van Bosse, 1923, p. 353. Børgesen, 1932, p. 132, figs. 17 and 18.

Lophura armata Kützinger, 1866, p. 2, pl. 3, figs. a and b.

Rhodomela crassicaulis Harvey, Ceylon algae no. 8 (nomen nudum). Svedelius, 1906, p. 191, figs. 3 and 9, pl. 6, fig. A.

Chondria minima Weber-van Bosse, 1921, p. 309, pl. 7, fig. 9.

Specimens of this species, which is here reported for the first time from South Africa, were collected at Port Shepstone on 27 July 1938 by Dr. Pocock

and me and at Chakas Rock (north of Durban) by Dr. Pocock (her no. 9526) on 14 October 1951.

Chondria armata was established by Kützing (1866) as *Lophura armata* on the basis of material from New Caledonia. The species is also known from Japan, Indonesia, southern India, and Ceylon. The South African plants agree well with published accounts and illustrations of the species and with specimens of it from Japan, India, and Ceylon in the herbarium of the University of California.

***Dasyopsis pinnatifolia* (Suhr) Schmitz**

Dasyopsis pinnatifolia (Suhr) Schmitz, 1893, p. 231; 1894, p. 194.

Ptilota? pinnatifolia Suhr, 1834, p. 732, pl. 2, figs. 18 and t.

Carpoblepharis pinnatifolia (Suhr) Kützing, 1847, p. 1; 1849, p. 691; 1862, pl. 60, figs. d and e. Delf and Michell, 1921, p. 116.

Dasya pinnatifolia (Suhr) Schmitz, 1893, p. 230, f.n.l.

Sarcomenia? sandersoni Harvey ex J. Agardh, 1896, p. 137.

The herbarium of the University of Kiel contains a fine specimen of the original material of "*Ptilota? pinnatifolia* S." from "Algoa Bai" (filed under *Carpoblepharis*) which I have chosen as lectotype of this species. The Botanical Museum of Stockholm also has a sheet, containing three fragments, of the original material. Tyson's collection in the Bolus Herbarium contains a specimen from Algoa Bay, reported by Delf and Michell (1921) as *Carpoblepharis pinnatifolia*, but the collector's name is not given on the sheet.

The little-known *Sarcomenia? sandersoni* Harvey ex J. Agardh (1896) which is based on a specimen from Port Natal, has been found to be conspecific with *Dasyopsis pinnatifolia*. A relationship with *Dasyopsis plana*, the lectotype of *Dasyopsis*, was already suspected by J. Agardh when he described *S. sandersoni*. I am indebted to Dr. H. B. S. Womersley, who saw a specimen in Harvey's collection at Trinity College, Dublin, for bringing this species, which I had overlooked, to my attention. He also kindly sent me a fragment of the plant. In 1959, when Dr. M. A. Pocock visited Dublin, she kindly made for me a sketch of Harvey's specimen. At my request Dr. Peter Dixon in 1958 looked at the material of this taxon in the Agardh Herbarium. He found that only a minute fragment was present, no. 44318. I am, therefore, designating the specimen in Harvey's collection at Dublin as lectotype of *S. sandersoni*.

Dasyopsis pinnatifolia is a rare species which, in addition to the three collections mentioned above, has been collected, as far as I am aware, only by Dr. Pocock. She obtained it in the drift at Sharks Bay, Port Alfred, on 19 March 1961 and kindly sent me a small piece of a male plant preserved in formalin.

***Galaxaura corymbifera* Kjellman**

Galaxaura corymbifera Kjellman, 1900, p. 87, pl. 19, figs. 21–27 and pl. 20, fig. 50. Kylin, 1938, p. 6, fig. 1F, pl. 2, fig. 5.

Galaxaura breviararticulata Kjellman, 1900, p. 84, pl. 18, figs. 1–13 and pl. 20, fig. 51.

Galaxaura effusa Kjellman, 1900, p. 84, pl. 18, figs. 14–18, pl. 20, fig. 52.

Galaxaura obtusata sensu Krauss, 1846, p. 214. Sensu Areschoug, 1851, p. 22. Sensu Kützing, 1858, p. 16, pl. 35, fig. I. Sensu Barton, 1893, p. 144. Sensu Delf and Michell, 1921, p. 102.

Galaxaura umbellata sensu J. Agardh, 1876, p. 526, pro parte.

Galaxaura oblongata sensu Kützing, 1858, p. 16, pl. 35, fig. II.

Kjellman (1900) described this plant under three names: *Galaxaura corymbifera*, *G. breviararticulata*, and *G. effusa*. Through the work of Kylin (1938), DeValéra (1938), and especially that of Svedelius (1942), the species has become well known as *G. corymbifera* and I have, therefore, adopted this name.

Formerly (Krauss, 1846; Areschoug, 1851; Kützing, 1858; Barton, 1893; Delf and Michell, 1921) the South African plant was usually referred to *Galaxaura obtusata*, a species based on a plant from the West Indies which apparently does not occur in South Africa.

***Galaxaura diesingiana* Zanardini**

Galaxaura diesingiana Zanardini, 1846, p. 51; 1862, p. 475, pl. 31, figs. B1–B5.

Galaxaura beckeri Schmitz ex Mazza?, 1906, p. 3.

Galaxaura natalensis Kylin, 1938, p. 6, fig. 1E and pl. 2, fig. 4.

Galaxaura marginata sensu Krauss, 1846, p. 214.

Zanardinia marginata sensu Barton, 1893, p. 171 (pro parte).

Zanardinia marginata b. *diesingiana* (Zanardini) J. Agardh, 1876, p. 534.

Brachycladia marginata f. *diesingiana* (Zanardini) DeToni, 1897, p. 110.

Euhymenia capensis Kützing, 1849, p. 742.

The genus *Galaxaura* and especially *G. diesingiana*, as far as its South African representatives are concerned, have suffered a great deal of misunderstanding. Much of the misunderstanding has stemmed from the fact that Kjellman (1900), the monographer of the genus, treated the sexual and tetrasporangial phases of the plants as representative of different species; and many workers even today follow the example set by Kjellman. Howe (1917, 1918) was the first to bring attention to the fact that gametophytic and sporophytic plants of species of *Galaxaura* differ from each other in the structure of the cortex. Svedelius (1942), in his paper on the South African species of *Galaxaura*, cast further light on the dimorphism that exists in the genus.

Galaxaura diesingiana was described by Zanardini on a tetrasporangial

plant which was collected by Pöppig at Port Natal and sent to him by Diesing. I have not seen Zanardini's type but have seen the isotypes (3 on one sheet) in Diesing's collection in the Natural History Museum of Vienna.

Galaxaura beckeri was described by Mazza (1906) on the basis of material collected by Becker at The Kowie (Port Alfred). The name had been proposed by Schmitz (who did not live to publish it) and Becker distributed specimens of the plant under this name. According to DeToni (1924, p. 136) *G. beckeri* is the same as *G. diesingiana*. However, the somewhat similar *G. magna* Kjellman (1900) is also occasionally obtained at Port Alfred and it is necessary that Mazza's type be examined before it can be stated with certainty that *G. beckeri* is a synonym of *G. diesingiana*. The specimen of *G. beckeri* illustrated by Kylin (1938, pl. 1, fig. 3) is *G. diesingiana* and so are two of the three specimens under the name *G. beckeri* in the Tyson Collection (Delf and Michell, 1921, p. 103) of the Bolus Herbarium, the third being representative of *G. magna*.

Galaxaura natalensis was described by Kylin (1938) on a female plant of *G. diesingiana*. The material reported by Krauss (1946) as *G. marginata* also is representative of *G. diesingiana* (specimens seen in S, BM, and W) and the record by Barton (1893) of *Zanardinia marginata* is based, in part (i.e. the Carr, Flanagan, Krauss, and Gueinzus specimens), on *G. diesingiana*.¹ As far as known *G. marginata* (Ellis et Solander) Lamouroux, which is based on a specimen from the Bahama Islands, does not occur in South Africa.

Another taxon that is conspecific with *Galaxaura diesingiana* is the species described by Kützing (1849) as *Euhymenia capensis*. The type of this species is not in Kützing's collection at Leiden. However, I received on loan from the National Herbarium of Victoria, Melbourne, a specimen labelled "Euhymenia capensis Kütz. Kallymenia—J. Ag. Port Natal". This specimen agrees well with Kützing's (1849, p. 742) diagnosis of *E. capensis* and I have chosen it as lectotype of this species.

In 1867 Kützing illustrated a plant in volume 17 of his *Tabulae phycologicae* (pl. 74) under the name *Euhymenia capensis*. This specimen is in Kützing's collection at Leiden. However, it was not collected by Gueinzus at Port Natal, as stated by Kützing on page 22 of this volume, but at "Elim". Elim is an inland Moravian Mission Station not far from Struis Bay and Cape Agulhas and it may be assumed that the specimen was collected by a member of the Mission in the vicinity of Struis Bay or Cape Agulhas. This specimen is representative of *Anatheca dentata* (Suhr) Papenfuss (1940, p. 218), of which I collected specimens in the drift at Struis Bay in February 1937.

¹ The Hohenacker specimen cited by Barton is an isotype of *G. magna* Kjellman and the Bowerbank specimen is representative of *G. tenera* Kjellman. The specimens cited by Barton are all in the herbarium of the British Museum (Natural History).

Euhymenia capensis has been the cause of a good deal of confusion. Presumably on the basis of Kützing's illustration of the habit of the plant which he in 1867 misidentified as *E. capensis*, J. Agardh in 1892 (p. 67) made the combination *Kallymenia capensis*. The material that J. Agardh had in hand (nos. 24713 and 24715 in Herbarium Agardh) was of a cryptonemiaceous plant (sent to him by Holmes) that is common in the drift at Port Alfred. The same species was reported from South Africa under the name *K. capensis* by Barton (1893, p. 140), as *Cryptonemia* ? *capensis* by Barton (1896, p. 196) and Delf and Michell (1921, p. 118), and as *Halymenia* [sp.] by Delf and Michell (1921, p. 117), with the comment "This species is unnamed but resembles *H. ligulata* [= *Halarachnion ligulatum*]." The species is representative of the genus *Cryptonemia* and will be reported on by Dr. Young-Meng Chiang in his thesis on Cryptonemiaceae.

***Grateloupia filicina* (Wulfen) C. Agardh**

Grateloupia filicina (Wulfen) C. Agardh, 1822, p. 223.

Chaetangium zeyheri Kützing, 1849, p. 793.

No material of *Chaetangium zeyheri* could be found in Kützing's collection at Leiden. Two of Zeyher's specimens bearing this name are present in the Botanical Museum of Stockholm, and the National Herbarium of Victoria, Australia, also has what probably is an authentic specimen of this species. All these specimens are representative of *Grateloupia filicina* (Wulfen) C. Agardh.

***Grateloupia longifolia* Kylin**

Grateloupia longifolia Kylin, 1938, p. 9.

Schizymenia undulata (J. Agardh) J. Agardh, 1851a, p. 175 (non *Grateloupia undulata* J. Agardh, 1876, p. 155).

Platymenia undulata J. Agardh, 1848, p. 47.

Platymenia undulata var. *linearis* J. Agardh, 1849, p. 88.

Iridaea undulata sensu Barton, 1893, p. 139.

This species was first described by J. Agardh (1848) as *Platymenia undulata*. Kylin (1938) found it to be a species of *Grateloupia* and named it *G. longifolia*, the epithet *undulata* being unavailable because of the existence of *G. undulata* J. Agardh (1876).

Barton (1893), presumably on the basis of a specimen in Kew Herbarium which was collected in Table Bay by Pappe, reported a plant from South Africa under the name *Iridaea undulata* J. Agardh. As far as I have been able to establish, no species was described under this binomial by J. Agardh or anyone else. The specimen in question is representative of *Grateloupia longifolia* Kylin. Barton, in her list of South African marine algae, also included *Schizy-*

menia undulata (J. Agardh) J. Agardh, but she had not seen material of this taxon.

Heterosiphonia crispa (Suhr) Falkenberg

Heterosiphonia crispa (Suhr) Falkenberg, 1901, p. 642.

Dasya crispa Suhr, 1840, p. 279.

Dasya callithamnion sensu Barton, 1893, p. 175 [non (Sonder) Harvey = *Heterosiphonia callithamnion* (Sonder) Falkenberg].

On the basis of a specimen collected at Port Elizabeth by Spencer, Barton (1893) reported the occurrence of *Dasya callithamnion* (= *Heterosiphonia callithamnion*) in South Africa. The specimen in question is in the herbarium of the British Museum (Natural History); it is representative of *Heterosiphonia crispa* (Suhr) Falkenberg.

Hypnea musciformis (Wulfen) Lamouroux

Hypnea hamulosa sensu J. Agardh, 1851*b*, p. 447; 1876, p. 563.

Hypnea episcopalis sensu Barton, 1893, p. 173.

J. Agardh (1851*b*, 1876) reported *Hypnea hamulosa* from South Africa on the basis of a specimen (Herb. Agardh no. 33796) which he received from Binder. The specimen is representative of *H. musciformis*. In an earlier paper (1958), I have discussed the confusion relating to the binomial *H. hamulosa*.

Barton (1893) reported *Hypnea episcopalis* from South Africa on the basis of a specimen in Dickie's herbarium. This specimen is in the herbarium of the British Museum (Natural History); it is representative of *H. musciformis*.

Kallymenia agardhii Norris

Kallymenia agardhii Norris, 1964, p. 91.

Iridaea serratifolia sensu Barton, 1893, p. 139.

Barton (1893), presumably on the basis of a specimen in Kew Herbarium which was collected in Table Bay by Pappe, reported a plant from South Africa under the name *Iridaea serratifolia* J. Agardh. As far as I have been able to establish, no species was described under this binomial by J. Agardh or anyone else. The specimen in question is representative of *Kallymenia agardhii* Norris.

Metamastophora stelligera (Endlicher et Diesing) Setchell

Metamastophora stelligera (Endlicher et Diesing) Setchell, 1943, p. 132.

Melobesia (*Mastophora*) *stelligera* Endlicher et Diesing, 1845, p. 290.

Mastophora hypoleuca Harvey, 1847, p. 108, pl. 41, figs. 1-3.

Peyssonelia caulescens Kützinger, 1849, p. 694.

The genus *Metamastophora* was erected by Setchell in 1943. He and Suneson (1945) independently came to the conclusion that *Melobesia* (*Mastophora*) *stelligera* Endlicher et Diesing (1845) and *Mastophora hypoleuca* Harvey (1847), both based on material from Port Natal, were conspecific.

Examination of the type of *Peyssonelia caulescens* Kützing (1849), the source of which also was Port Natal (where it was collected by Gueinzus, who also collected Harvey's material of *Mastophora hypoleuca*), has revealed that this taxon also is the same as *Metamastophora stelligera*. The identity of *Peyssonelia caulescens* has been a matter of uncertainty ever since it was erected by Kützing in 1849. The species escaped the notice of J. Agardh and DeToni and was not illustrated by Kützing in his *Tabulae phycologicae*; Barton (1893, p. 142) appears to have been the only person aware of its existence.

***Nienburgia pinnatifida* (Suhr) Papenfuss, comb. nov.**

Nitophyllum pinnatifidum Suhr, 1834, p. 726, figs. 7, k and l.

Nitophyllum kowiensis Schmitz ex Delf et Michell, 1921, p. 111 (nomen nudum).

In an earlier paper (1956) I pointed out that the long-lost *Nitophyllum serratum* of Suhr (1836) was a species of *Nienburgia* Kylin (1935) and that it was the first species of this genus to have become known from the southern hemisphere. It is of interest, therefore, that another of Suhr's (1834) long-lost species, *Nitophyllum pinnatifidum*, also is representative of *Nienburgia*.

The identity of *Nitophyllum pinnatifidum* has been uncertain ever since it was described. Kützing (1849, p. 869) included it in his list of *Species dubiae*, J. Agardh (1852, p. 672) listed it under *Species inquirendae*, and DeToni (1900, p. 665) placed it under *Species minus notae aut quoad sectionem incertae*.

The National Herbarium of Victoria, Australia, contains a specimen of "*Nitophyllum pinnatifidum* S" from "Algoa-bai", the type locality, which the Director of the Herbarium kindly allowed me to have on loan.

Examination of this specimen revealed that it is the same species as the one to which Schmitz had given the manuscript name of *Nitophyllum kowiensis* (see Delf et Michell, 1921, p. 111) and material of which is present in Tyson's and Becker's collections in the Bolus Herbarium of the University of Cape Town. Dr. Mary A. Pocock collected the plant (her no. 4884) on 18 February 1942 at Port Alfred (Kowie West), where it occurred in the drift as an epiphyte on *Ballia beckeri* Schmitz ex Mazza, and has generously shared her material with me.

***Peyssonelia capensis* Montagne**

Peyssonelia capensis Montagne, 1847, p. 177.

Peyssonelia squamaria sensu Krauss, 1846, p. 209. Sensu Barton, 1893, p. 142; 1896, p. 197.

Peyssonelia major Kützing, 1849, p. 693; 1869, p. 31, pl. 88.

Ralfsia major Kützing, 1859, p. 32, pl. 77, fig. iv.

In a previous paper (1952) I pointed out that the South African species that had become well known as *Peyssonelia major* Kützing (1849) should be known as *P. capensis* Montagne (1847).

Krauss (1846) and Barton (1893) reported *Peyssonelia squamaria* from South Africa. The herbarium of the University of Kiel contains one of Krauss's specimens of this species; it is representative of *P. capensis*. Barton (1893, p. 142) cited the record of Krauss and a specimen collected by Gueinzus that she had seen. Later (1896, p. 197) she again named Krauss and Gueinzus as collectors of *Peyssonelia squamaria*, but without an exclamation mark after the name of Gueinzus as she had noted in 1893, and remarked, "I have not seen a specimen of this plant from South Africa, and much doubt if these records are correct." Whereas Barton in 1893 had not seen material of *P. major*, in 1896 she cited, among others, a Gueinzus specimen of this species. It seems reasonably certain that Barton in 1896 removed to *P. major* the Gueinzus specimen that she in 1893 had referred to *P. squamaria*, but neglected to remove his name as a collector of the latter species. Gueinzus was the collector of the type material of *P. major* but was not credited by anyone, except Barton, as a collector of *P. squamaria* in South Africa. The Gueinzus specimen referred to *P. major* by Barton in 1896 is in the herbarium of the British Museum (Natural History); it is representative of *P. capensis*. As far as known, therefore, *P. squamaria* does not occur in South Africa.

The type of the species that Kützing (1859) described as *Ralfsia major* is in the Botanical Museum of Stockholm. It is a specimen of *Peyssonelia capensis*.

***Plocamium maxillosum* (Poiret) Lamouroux**

Plocamium maxillosum (Poiret) Lamouroux, 1813, p. 138.

Fucus maxillosus Poiret, 1808, p. 389.

Plocamium membranaceum Suhr, 1840, p. 261.

On the basis of material in the herbarium of Du Petit-Thouars, Poiret in 1808 described a plant from South Africa as *Fucus maxillosus*. The species was transferred to *Plocamium* by Lamouroux when he erected this genus in 1813. C. Agardh (1822, p. 181) reduced *Fucus maxillosus* to a synonym of his variety *costata* (from Australia) of *Delesseria plocamium* [= *Plocamium costatum* (C. Agardh) J. D. Hooker et Harvey] but neglected to include South Africa as one of the localities for this taxon, and Poiret's species has remained buried in the synonymy of *Plocamium costatum* (see DeToni, 1900, p. 597) and lost from the flora of South Africa down to the present. I am indebted to Dr. P. C. Silva for bringing it to my attention.

Examination of a small piece of the type of *Fucus maxillosus*, which was kindly sent to me by Mr. M. Denizot of the cryptogamic herbarium of the Natural History Museum of Paris, has shown that the species is the same as the one described by Suhr in 1840 as *Plocamium membranaceum*. I have seen three of Suhr's specimens: one in Herbarium Agardh (no. 27963), one in the Natural History Museum of Stockholm, and the third in the herbarium of the University of Kiel. The latter is an excellent specimen and is accompanied by extensive notes in Suhr's hand. I have chosen it as lectotype of *P. membranaceum*. *Plocamium membranaceum* or *P. maxillosum*, by which name the plant should be known, is a handsome deep-water species, which is found in the drift in Table Bay and elsewhere on the Cape Peninsula (see also Simons, 1964, p. 185). On the basis of a specimen in Tyson's collection (BOL), Delf and Michell (1921, p. 111) reported it under the name *P. nobile*. On the other hand, the plant from False Bay which Kylin (1938, p. 12) referred to *P. membranaceum* is representative of *P. suhrii* Kützing according to Simons (1964, p. 189). *Plocamium latiusculum* Kützing (1866, p. 17, pl. 47, figs. d-e) was reduced to a synonym of *P. membranaceum* by J. Agardh (1876, p. 341). DeToni (1900, p. 593) and Simons (1964, p. 185) also give *P. latiusculum* as a synonym of *P. membranaceum*, but examination of the type of *P. latiusculum* has shown that this species is conspecific with *P. regidum* Bory (in Bélanger, 1834).

***Polyneura venosa* (Harvey) Papenfuss, comb. nov.**

Nitophyllum venosum Harvey, 1847, p. 118.

Aglaophyllum undulatum Kützing, 1849, p. 868; 1866, p. 14, pl. 38.

Nitophyllum undulatum (Kützing) J. Agardh, 1852, p. 663.

Myriogramme undulata (Kützing) Kylin, 1924, p. 59.

Nitophyllum capense Harvey in Barton, 1893, p. 144 (nomen nudum).

Examination of the procarp of the plant that Harvey (1847) described from South Africa as *Nitophyllum venosum* has shown that they contain two carpegonial branches and one group of sterile cells. This is a feature that is peculiar to only two genera of Delesseriaceae, namely, *Hemineura* Harvey, a member of the subfamily Delesserioidae, and *Polyneura* (J. Agardh) Kylin, a member of the subfamily Nitophylloideae (see Kylin, 1924, pp. 6 and 33). *Nitophyllum venosum* agrees with species of *Polyneura* not only as regards the structure of the procarp but also in the structure of the thallus; the species is, therefore, here transferred to the genus *Polyneura*.

Examination of Kützing's (1849) material of the South African plant that he described as *Aglaophyllum undulatum* and of a Harvey specimen in the herbarium of the British Museum (Natural History) of the plant that Barton (1893)

reported as *Nitophyllum capense* Harvey, a nomen nudum, has shown that these names are based on specimens of *Polyneura venosa*.

The occurrence in South Africa of a species of *Polyneura* presents an interesting extension of the geographic distribution of this genus. Heretofore, *Polyneura* has been credited with four species (see Kylin, 1924), three of which are based on types from England and the fourth on a type from Vancouver Island in the northeastern Pacific.

Polysiphonia incompta Harvey

Polysiphonia incompta Harvey, 1847, p. 44.

Polysiphonia sertularioides sensu Barton, 1896, p. 198. Delf and Michell, 1921, p. 113.

Polysiphonia urceolata sensu Delf and Michell, 1921, p. 113.

Barton (1896) and Delf and Michell (1921) reported *Polysiphonia sertularioides* from South Africa. Barton saw material collected at Port Elizabeth by Farquhar and in British Kaffraria by Flanagan, and Delf and Michell saw duplicates of the Flanagan material reported on by Barton and also material collected by Flanagan at Cape Morgan. The specimens reported on by Barton are in the herbarium of the British Museum (Natural History) and those reported on by Delf and Michell are in the Bolus Herbarium of the University of Cape Town. All these specimens are representative of *P. incompta*. As far as known, therefore, *P. sertularioides* does not occur in South Africa.

Polysiphonia urceolata was reported from South Africa by Barton (1893, p. 176) and by Delf and Michell (1921, p. 113). Elsewhere in the present article it is pointed out that Barton's record is based on a specimen of *P. sulcata*. The specimens from Algoa Bay reported as *P. urceolata* by Delf and Michell are in the Bolus Herbarium; they are representative of *P. incompta*. As far as known, therefore, *P. urceolata*, like *P. sertularioides*, does not occur in South Africa.

Polysiphonia sulcata Rudolphi

Polysiphonia sulcata Rudolphi, 1831, p. 177.

Polysiphonia pappeana Kützinger, 1849, p. 813; 1863, p. 17, pl. 55, figs. f-h.

Polysiphonia linocladia Kützinger, 1849, p. 813; 1863, p. 18, pl. 56, figs. a-e.

Polysiphonia juncea Kützinger, 1849, p. 813; 1863, p. 17, pl. 55, figs. a-e.

Polysiphonia urceolata sensu Barton, 1893, p. 176.

Polysiphonia sulcata, which is based on a plant from Table Bay, has suffered neglect ever since its establishment by Rudolphi in 1831. Suhr (1834, p. 741) appears to be the only person who accepted it. The name is not mentioned, even as a synonym, in the works of J. Agardh and DeToni. Kützinger (1849,

p. 811) included it in the synonymy of *P. agardhiana* Greville, without, however, listing South Africa as one of the localities of this species. *Polysiphonia sulcata* is a sparsely branched flagelliform plant which is common in Table Bay. Kützing (1849) described it under three different names (*P. pappeana*, *P. linocladia*, and *P. juncea*) on specimens given to him by Pappe. His types are at Leiden, where I have seen them.

Barton's (1893) record of *Polysiphonia urceolata* from Table Bay is based on a misidentification of a Harvey specimen of *P. sulcata* which is in the herbarium of the British Museum (Natural History).

Authentic material of *Polysiphonia sulcata* is present in the following institutions: Natural History Museum of Vienna, Natural History Museum of Stockholm, Rijksherbarium in Leiden, National Herbarium of Victoria in Melbourne, and the Botanical Institute of Kiel University. I have chosen a sheet (which contains four mounts of the species) in the Natural History Museum of Stockholm as lectotype of the species.

***Polysiphonia urbana* Harvey**

Polysiphonia urbana Harvey, 1847, p. 55.

Polysiphonia corymbosa sensu Delf and Michell, 1921, p. 114.

Polysiphonia corymbifera sensu Delf and Michell, 1921, p. 114.

The only record of the occurrence of *Polysiphonia corymbosa* in South Africa is that by Delf and Michell (1921). This record and the one of *P. corymbifera* by the same authors are based on the same material, which is in the Bolus Herbarium of the University of Cape Town. These specimens (3) are representative of *P. urbana*. As far as known *P. corymbosa* does not occur in South Africa. The South African species previously known as *P. corymbifera* (C. Agardh) Harvey is now known as *Strebloladia corymbifera* (C. Agardh) Kylin (1938).

***Prionitis filiformis* Kylin**

This species of Kylin's (1941, p. 13; also see Smith, 1944, p. 244, pl. 56, fig. 1) is based on a plant from California which Harvey (1853, p. 197) first described under the name *Prionitis lanceolata* β *angusta* [not *P. angusta* (Harvey) Okamura = *Carpopeltis angusta* (Harvey) Okamura].

Prionitis filiformis is here reported for the first time from South Africa. Dr. Pocock and I obtained specimens of it in the drift at Port Alfred in June and July of 1938, and she collected attached plants of it at Riet River on 17 August 1943 (her nos. 7501, 7502 and 7503). Dr. Pocock also found it in the drift at Kleinmond (east of Port Alfred) on 8 August 1947 (her no. 9097).

It is surprising that *Prionitis filiformis* should occur in South Africa. Considering how far apart California and South Africa are, it is logical to presume

that the South African plant would be a different species. However, comparison of South African specimens with ones from California has not brought to light clear-cut characters whereby they may be distinguished.

***Pseudogloiophloea capensis* (Setchell) Levring in Svedelius**

Pseudogloiophloea capensis (Setchell) Levring in Svedelius, 1956, p. 13, figs. 6, 7, 9–14.

Gloiophloea capensis Setchell, 1914, p. 117, pl. 16, figs. 58 and 59.

Scinaia furcellata sensu Barton, 1893, p. 144. Sensu Delf and Michell, 1921, p. 102.

Halymenia furcellata sensu Harvey, 1841, p. 52 (pro parte, i.e. as to specimens from South Africa).

Levring (1953, p. 505; 1955, p. 420; and in Svedelius, 1956, p. 8) has pointed out that Setchell (1914) had the wrong plant in hand when he studied what he thought was *Gloiophloea scinaoides*, the type of the genus, and that none of the species referred to *Gloiophloea* by him belongs to this genus. Instead, the species described by Setchell belong to a new genus, for which Levring proposed the name *Pseudogloiophloea*.²

The type of *Pseudogloiophloea capensis* was collected by Davy at Port Alfred and is in the herbarium of the University of California. The records of Barton (1893) and of Delf and Michell (1921) of *Scinaia furcellata* (a species which does not occur in South Africa, as far as known) are based on *P. capensis*, as is the record of Harvey (1841) of *Halymenia furcellata*. The specimen cited by Barton is in the herbarium of the British Museum (Natural History), those cited by Delf and Michell are in the Tyson Collection of the Bolus Herbarium, and the specimens (from Table Bay) on which Harvey's record is based are in his herbarium at Trinity College, Dublin.

² Subsequent to the appearance of Setchell's paper and prior to the appearance of Levring's papers, four new species of *Gloiophloea* were described, as follows: *G. fascicularis* Børgesen (1934, p. 2), *G. chinensis* Tseng (1941, p. 111), *G. caribaea* Taylor (1943, p. 148), and *G. verae* Dickinson (1951, p. 295). *G. fascicularis* Børgesen has been removed to *Pseudogloiophloea* by Desikachary and Singh (1958). Taylor (1943, p. 149), when describing *G. caribaea*, remarked that this species comes close to *G. halliae* Setchell (which is also based on a plant from the Caribbean). Until more has become known about the range in variation in these two taxa, it seems best not to transfer *G. caribaea* to *Pseudogloiophloea* as an autonomous species. The figures by Tseng (1941, figs. 13a and b) and Dickinson (1951, fig. [3]) of *G. chinensis* and *G. verae*, respectively, show that these two species are representative of the genus *Pseudogloiophloea*, and this has been confirmed by examination of specimens of these two species in the herbarium of the University of California (isotype of *G. chinensis* and material of *G. verae* collected by my son, T. Papenfuss, 1 mile east of Tema, Ghana, in November 1961). The following new combinations are, therefore, in order:

Pseudogloiophloea chinensis (Tseng) Papenfuss, comb. nov. *Gloiophloea chinensis* Tseng, 1941, p. 111, fig. 13, pl. 10.

Pseudogloiophloea verae (Dickinson) Papenfuss, comb. nov. *Gloiophloea verae* Dickinson, 1951, p. 295, fig. [3], pl. 4.

Harvey (1846, text to pl. 69) gave *Coralloopsis dichotoma* Suhr (1839, p. 70, pl. 3, fig. 44) as a synonym of *Ginnania furcellata* (i.e. *Pseudogloiophloea capensis*, as far as Harvey's record from the Cape of Good Hope is concerned). However, as I have pointed out in an earlier paper (1956, p. 70), *C. dichotoma* Suhr is representative of *Galaxaura magna* Kjellman (1900).

Setchell was of the opinion that *Pseudogloiophloea capensis* is dioecious. However, the species is monoecious, as has been pointed out by Svedelius.

***Rhabdonia natalensis* Reinbold**

Rhabdonia natalensis Reinbold, in Tyson, 1912, p. 199. Delf and Michell, 1921, p. 107

Solieria natalensis (Reinbold) Borgesen, 1943, p. 40 (only as to binomial, not as to material in hand).

This species was described by Reinbold (in Tyson, 1912) on the basis of material collected by Flanagan (his no. 278) near Cape Morgan and by Becker at The Kowie (Port Alfred). Reinbold did not designate a type. I have chosen one of his specimens in the Munich herbarium as lectotype of the species. This specimen was collected by Becker and is labelled "Rhabdonia natalensis Reinb." in Reinbold's hand. Becker's collection in the Bolus Herbarium contains an isotype of the species and the Tyson Collection of the Bolus Herbarium contains a duplicate of Flanagan no. 278.

Borgesen (1943), on the basis of material from Mauritius, made the combination *Solieria natalensis*. However, the South African plant is not a species of *Solieria*, which genus includes species that are multiaxial in construction. To judge from Borgesen's illustration of the plant from Mauritius (his fig. 14), it can be stated with reasonable certainty that it is not representative of *Rhabdonia natalensis*, but where it belongs taxonomically, I am unable to say. The South African plant, which is uniaxial in construction, appears to be correctly placed in *Rhabdonia*.

***Spyridia hypnoides* (Bory) Papenfuss, comb. nov.**

Thamnophora hypnoides Bory in Bélanger, 1834, p. 175.

Spyridia insignis (J. Agardh) J. Agardh, 1851b, p. 344.

Bindera insignis J. Agardh, 1841, p. 37.

Spyridia ericoides (Hering) Kützinger, 1847, p. 37.

Alsidium ericoides Hering, 1841, p. 91.

Spyridia tetracantha Kützinger, 1862, p. 16, pl. 52, figs. d and e.

Spyridea aculeata (C. Agardh ex Decaisne) Kützinger, 1843, p. 377; 1849, p. 668.

Ceramium aculeatum C. Agardh ex Decaisne, 1841, p. 179.

On the basis of material collected by Krauss in South Africa, Hering in 1841 described a plant as *Alsidium ericoides*. This species was removed to

Spyridia by Kützing in 1847. J. Agardh in 1851(b) reduced *S. ericoides* to a synonym of *S. insignis* (J. Agardh). J. Agardh, a species based on material from India. To judge from the references cited by J. Agardh (1851b, p. 345) and DeToni (1903, p. 1434) the erroneous impression is gained that the name *S. ericoides* has the right to priority. J. Agardh (loc. cit.) in error cited his "Adversaria" (1844) as the place of publication of *S. insignis*. In this work the species (as *Bindera insignis*) is mentioned on page 29, but the name is not accompanied by a description. However, the species was described by J. Agardh in 1841 (as *Bindera insignis*, a combined generic and specific description). The part of J. Agardh's 1841 paper which included the description of *B. insignis* appeared in Heft 1 of volume 15 of *Linnaea* and probably appeared in the early part of 1841. Hering's paper (1841) in which he described *Alsidium ericoides* appeared in the October issue of volume 8 of the *Annals and Magazine of Natural History*. Another name given to this species, *Ceramium aculeatum* C. Agardh ex Decaisne (discussed below), was also published in 1841. The month of appearance of Decaisne's paper is not known. However, as is pointed out below, the oldest name for this species is *Thamnophora hypnoides* Bory (in Bélanger, 1834).

I have examined J. Agardh's type (no. 51511) of *Bindera insignis* and original material of *Alsidium ericoides* in the herbaria of the Natural History Museum of Vienna (lectotype) and the Botanical Institute of the University of Kiel and agree with the opinion of J. Agardh that these two taxa are conspecific. I have also examined Kützing's (1862) type (a fragment) of *Spyridia tetraacantha*, a species based on material from South Africa, and have found that it also is representative of *S. insignis*, a conclusion previously arrived at by J. Agardh (1876, p. 272), presumably on the basis of Kützing's figures of the former.

In connection with the study of *Spyridia insignis* my attention was also drawn to *S. aculeata* (C. Agardh ex Decaisne) Kützing. This species was described by Decaisne (1841, p. 179) as *Ceramium aculeatum* on the basis of material collected by Schimper at Nuweiba (Sinai Peninsula) in the Red Sea. It was removed to *Spyridia* by Kützing in 1843. Kützing at the same time reduced *Bindera insignis* J. Agardh to a synonym of *S. aculeata*. Ruprecht (1849, p. 79) referred to the Red Sea plant as "*Bindera* sp. an *insignis*." Durairatnam (1961), in reporting both *S. aculeata* and *S. insignis* from Ceylon, remarked (p. 68): "I was not able to observe much difference between *Spyridia insignis* J. Ag. and *Spyridia aculeata* (Schimp.) Kuetz. except in external appearance." This apparent uncertainty about the distinctness of these two taxa and the fortunate circumstance that the herbarium of the University of California contains an isotype of *S. aculeata* (Schimper, *Unio itineraria* no. 966) caused me to compare *S. aculeata* with *S. insignis*. I could find no difference between them and consider them to be representative of the same species.

Finally, another species that required looking into was the one described by Bory (in Bélanger) as *Thamnophora hypnoides* in 1834 from Cape Comorin in southern India. J. Agardh (1851b, p. 345) gave this name as a doubtful synonym of *Spyridia insignis* and it has remained in that uncertain position down to the present.³

At my request Dr. Bourrelly and Mr. Denizot kindly sent me a small piece of the type of *T. hypnoides*, which is in the cryptogamic herbarium of the Natural History Museum of Paris. Examination of this piece has shown that *T. hypnoides* is conspecific with *Spyridia insignis*. Since the specific name *hypnoides* is the oldest of those given to this species, it becomes necessary to make the new combination *S. hypnoides*.

***Thamnoclonium proliferum* Sonder**

Thamnoclonium proliferum Sonder, 1845 (January), p. 56. Barton, 1896, p. 459.

Thamnoclonium latifrons Endlicher et Diesing, 1845 (April), p. 289.

Thamnoclonium hirsutum β *africanum* Kützing, 1849, p. 794.

Thamnoclonium dichotomum sensu Mazza (?), 1915, p. 61.

The genus *Thamnoclonium* was erected by Kützing in 1843 on the single Australian species *T. hirsutum* Kützing. Both Kützing (1849, p. 794) and J. Agardh (1876, p. 179) later recognized that this species was the same as the one from Australia described by J. Agardh in 1841 as *Polyphacum dichotomum*. The correct name of this species is, therefore, *T. dichotomum* (J. Agardh) J. Agardh.

In 1845 Endlicher and Diesing described *Thamnoclonium latifrons* on the basis of material from South Africa and Sonder described *T. proliferum* on the basis of material from Australia. In 1849 Kützing described *T. hirsutum* β *africanum* on the basis of material from South Africa.

Examination of Australian material of *Thamnoclonium proliferum* and of the types of *T. latifrons* (in the herbarium of the Museum of Natural History of Vienna) and *T. hirsutum* β *africanum* (in the Rijksherbarium, Leiden) has convinced me that these names apply to the same taxon, *T. proliferum* Sonder. Barton (1896, p. 459) reported *T. proliferum* from South Africa. The specimen in question, "ex Herb. Lübeck", is in the herbarium of the British Museum (Natural History), where I have seen it.

I have not seen the South African material referred to *Thamnoclonium dichotomum* by Mazza (1915) but suspect it to be representative of *T. proliferum*. It should be mentioned, however, that *T. dichotomum* and *T. proliferum* appear to be very similar, to judge from published descriptions of the two species. If they should in the future be shown to be conspecific, the correct name of the species will be *T. dichotomum* (J. Agardh) J. Agardh.

³ DeToni (1903, pp. 1433 and 1434) includes *Thamnophora hypnoides* in the synonymy of both *Spyridia aculeata* and *S. insignis*.

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